Faidherbia albida

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Faidherbia albida (Del.) A. Chev.

Taxonomy and nomenclature

Family: Fabaceae (Mimosoideae)

Synonyms: *Acacia albida* Del., *Acacia albida var. senegalensis* Benth., *Acacia gyrocarpa* Hochst. ex A. Rich., *Acacia mossambicensis* Bolle, *Acacia saccharata* Benth., *Prosopis kirkii* Oliv.

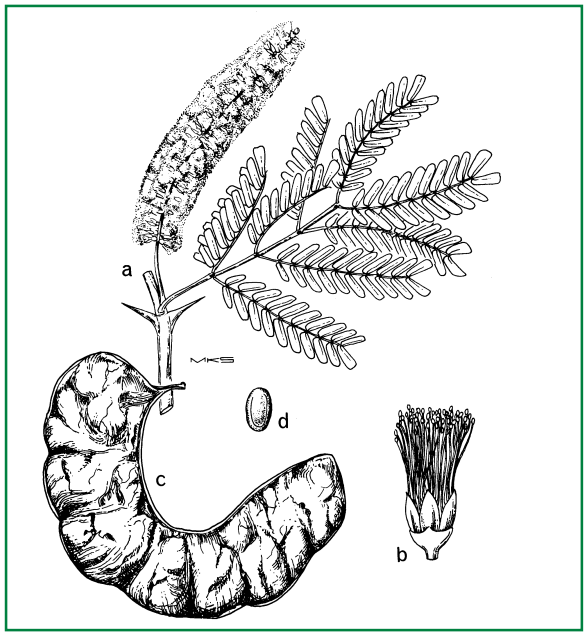
Vernacular/common names: apple-ring acacia, winter thorn (Eng.); cad, kad (Fr.).

Distribution and habitat

Widespread in dry tropical Africa into the Middle East and Arabia. Introduced into India, Pakistan, Nepal and, in the Western Hemisphere, Peru.

It can grow in a wide range of climates and habitats. The altitudinal range is from 270 m below sea level in Israel up to 2500 m in Sudan.

Provided there is access to underground water it can grow independent of rainfall, such as in the Namib Desert. In west African savannahs, optimal conditions are 500-800 mm annual rainfall while in East Africa it grows well with as little as 8 mm and as much as 1800 mm rain/year. It does not tolerate frost.It will grow on a wide range of soil types depending on the provenance, but requires a relatively high water table for establishment and prefers flat sites.



A, flowering branch; b, flower; c, pod; d, seed. From: Ross, 1977. A conspectus of the African *Acacia* species.

Uses

The unusual phenology and the ability to fix nitrogen makes *F. albida* excellent in agroforestry systems. The mulch created by falling leaf litter and the canopy shade at planting time favors crop production beneath its canopy.

It is also of high value as a fodder tree. Leaves, pods and seeds contain 200, 150 and 260 g total protein/kg of dry matter and total protein digestibility can reach 73%. Tannins limit digestibility, but incorporating pods into low quality fodder enhances ingestion without reducing digestibility. Milling the pods increases digestion of seeds. Other uses include firewood, charcoal, construction timber, medicine (bark), soil fixation and conservation.

Botanical description

Large tree to 30 m in height, 1m in diameter; normally only one stem. Bark on young shoots nearly white, grey/brown on older parts, with fissures revealing the green cortex. Spines in pairs, up to 3.2 cm long, never inflated.

Leaves up to 10 cm long, 3-10 pairs of pinnae each with 6-23 pairs of leaflets. Conspicuous glands at the junction of each pair of pinnae. Inflorescence a spike, 3-16 cm long. Flowers yellowish/white.

Fruit and seed description

Fruit: indehiscent pod, bright orange to reddish brown, smooth, distinctively coiled or twisted. The shape of the pods can vary considerably between trees in one population. There are 10-30 seeds/fruit.

Seed: 10-12 mm long, shiny brown. There are 7,000-20,000 seeds/kg, the seeds are smaller in west Africa than those from the east and south

Flowering and fruiting habit

An unusual feature of *A. albida* is the tendency to shed the leaves at the onset of the rainy season and remain leafless until the beginning of the dry season when new leaves appear and flowering commences.

In some areas flowering may occur twice in a year. Not all trees flower every year. In East Africa seeds mature in July-October.

Harvest

The seeds are ripe when the pod changes colour from green to yellow, and they should be collected as soon as possible to avoid insect infestation. If the pods are harvested when green, the seed can be afterripened with success. Harvest is done by shaking the tree and catching the pods in a tarpaulin. Collection from the ground should be avoided.

Processing and handling

After harvest, the pods are left to dry in the sun before they are packed in hessian bags.

Seed extraction is best done with a flailing tresher but pistle and morter can also be used. One kg of pods yields about 5.9 lt of seed. After extraction the seed is dried in the sun. For cleaning, an air screen cleaner is effective.

Storage and viability

The seed is orthodox and stores well. Infestation by insects is a problem, but only a minor one if the seeds are packed with CO_2 and stored at low temperatures.

Dormancy and pretreatment

The seed has physical dormancy. Scarification by nicking or burning gives the highest germination but good results can also be obtained by using a seedgun. The most common treatment is boiling the seeds in water for 3-5 minutes followed by 24 hours soaking in cold water. However, the effect of boiling water is variable and for some seedlots it has little effect.

Sowing and germination

The seeds are sown in pots or in 10 x 30 cm plastic bags and watered moderately. The roots must not be allowed to develop too much. Direct seeding is not recommended because of weed problems.

After 10-14 weeks the seedlings are ready for outplanting. This is done early in the rainy season. Seed from a broad range of provenances is available from members of the African *Acacia* trials network (OFI, CIRAD-Fôret, FAO).

Phytosanitary problems

The seeds are very susceptible to attack by bruchid beetles but with proper storage this can be limited.

Selected readings

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Crops of sweet potato grown under the canopy of *F. albida* at Gelemso in Ethiopia. Photo: Chris Fagg, OFI.

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